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MATERIAL SAFETY DATA SHEET

Company	Issue Date	Identification Number
RELIANCE STEEL & ALUMINUM CO. 2550 EAST 25TH STREET LOS ANGELES, CALIFORNIA 90058	NOVEMBER 25, 1985 REVISED MARCH 1, 1988	ALLOY STEEL HR & CR ALLOY LEADED STEEL
Trade Name (Common Name or Synonym) ALLOY LEADED i.e. 86L20 ALLOY STEEL i.e. 4130, 4140, 4340, 8620	Emergency Phone Number 213-582-2272 OR YOUR LOCAL RELIANCE DISTRIBUTOR	
Chemical Name	Formula	DOT Identification Number NA

I. INGREDIENTS

NOTE PRODUCTS UNDER NORMAL CONDITIONS DO NOT REPRESENT AN INHALATION, INGESTION OR CONTACT HEALTH HAZARD.

BASE METAL, ALLOYING ELEMENTS AND METALLIC COATINGS	CAS #	% COMPOSITION BY WEIGHT (1)	OSHA PEL	ACGIH TLV (mg/m³) (2)
Base Metal				
Iron (Fe)	7439-89-6	86-99	10	5 (As Iron Oxide)
Alloying Elements				
Nickel (Ni)	7440-02-0	<5	1	1
Chromium (Cr)	7440-47-3	<5	.5	.5
Silicon (Si)	7740-21-3	<5	15	10 (Total Dust)
Manganese (Mn)	7439-96-5	<2	5	5 (As Dust-Ceiling)
Carbon (C)	7440-44-0	<2	N.E.	N.E.
Molybdenum (Mo)	7439-98-7	<2	15	10 (Insoluble Compound)
Vanadium (V)	7440-62-2	<2	.5	.05 (Respirable Dust)
Aluminum (Al)	7429-90-5	<2	N.E.	10
Sulfur (S)	7704-34-9	<2	13	5 (As SO_2)
Phosphorus (P)	7723-14-0	<1	.1	.1 (Yellow)
Bismuth (Bi)	7440-69-9	<1	N.E.	N.E.
Copper (Cu)	7440-50-8	<1	1	1 (Dust & Mist)
Leaded Alloy				
Lead (Pb)	7439-92-1	<1	.05	.15 (Dust & Fume)

(1) % OF ALLOYING MATERIAL VARIES WITH GRADE OF MATERIAL (2) 1985 - 1986 ACGIH THRESHOLD LIMIT VALUE

II. PHYSICAL DATA

Material is (At Normal Conditions)	Appearance and Odor			
☐ Liquid ■ Solid ☐ Gas ☐ Other	GREY/BLACK ODORLESS			
Acidity/Alkalinity pH - NA	Melting Point > 2500 F Boiling Point NA F	Specific Gravity (H_2O = 1) APPROXIMATELY 7 Solubility in water (% by weight) NA	Vapor Pressure (mm Hg at 20 C) NA	

III. PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection	Hands, Arms and Body
NIOSH/MSHA APPROVED DUST & FUME RESPIRATOR SHOULD BE USED TO AVOID EXCESSIVE INHALATION OF PARTICULATES WHEN EXPOSURE EXCEEDS TLV'S	PROTECTIVE GLOVES ARE RECOMMENDED OURING HANDLING OF FINES EXPOSURE
Eyes and Face	**Other Clothing and Equipment**
SAFETY GLASSES OR GOGGLES SHOULD BE UTILIZED AS REQUIRED BY EXPOSURE	OTHER PROTECTIVE EQUIPMENT SHOULD BE UTILIZED AS REQUIRED BY THE WELDING STANDARD

IV. EMERGENCY MEDICAL PROCEDURES

IF EXPOSED TO EXCESSIVE LEVELS OF METAL FUMES, REMOVE TO FRESH AIR.

SEEK MEDICAL AID IMMEDIATELY.

EYES: FLUSH WITH WATER FOR AT LEAST 15 MINUTES.

V. HEALTH/SAFETY INFORMATION

STEEL PRODUCTS IN THE NATURAL STATE DO NOT PRESENT AN INHALATION, INGESTION OR CONTACT HAZARD. HOWEVER, OPERATIONS SUCH AS BURNING, WELDING, SAWING, BRAZING AND GRINDING MAY RELEASE FUMES AND/OR DUSTS WHICH MAY PRESENT HEALTH HAZARDS IF TLV'S ARE EXCEEDED

MAJOR EXPOSURE HAZARD
■ INHALATION ■ SKIN CONTACT ☐ SKIN ABSORPTION ■ INGESTION

Short term exposure to fumes/dust may produce irritation of eyes and respiratory system. Inhalation of high concentrations of freshly formed oxide fumes of iron, manganese, copper and lead may cause metal fume fever, characterized by a metallic taste in the mouth, dryness and irritation of the throat and influenza-like symptoms.

Chronic inhalation of high concentrations of iron oxide fumes or dust may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of feric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

Inhalation or ingestion of lead particles may result in lead induced systemic toxicity. Symptoms of lead poisoning include abdominal cramps, anemia, muscle weakness and headache. Prolonged exposure can cause behavioral changes, kidney damage, CNS damage and reproductive effects.

Chromium and nickel and their compounds are listed in the 3rd Annual Report on carcinogens, as prepared by the National Toxicology Program (NTP). Exposure to high concentrations of dust and fumes can cause sensitization dermatitus, inflammation and/or ulceration of upper respiratory tract and possible cancer of nasal passages and lungs.

Recent epidemiological studies of workers melting and working alloys containing nickel/chromium have found no increased risk of cancer.

SUSPECTED CANCER AGENT? NO THIS PRODUCTS INGREDIENTS ARE NOT FOUND IN THE LISTS BELOW
✓YES FEDERAL OSHA ✓NTP IARC

Fire and Explosion	Flash Point NA F	Auto Ignition Temperature NA F	Flammable Limits in Air Lower NA % Upper %	Extinguishing Media NA
	Fire and Explosion Hazards: STEEL PRODUCTS IN THE SOLID STATE PRESENT NO FIRE OR EXPLOSION HAZARD			Extinguishing Media not to be used: NA
Reactivity	Stability ■Stable ☐Unstable	Incompatibility (Materials to Avoid) REACTS WITH STRONG ACIDS TO PRODUCE HYDROGEN GAS		
	Conditions to Avoid NA			
	Hazardous Decomposition Products: METALLIC DUST OR FUMES MAY BE PRODUCED DURING WELDING, BURNING, GRINDING & POSSIBLY MACHINING. REFER TO ANSI Z49.1			

VI. ENVIRONMENTAL

Spill or Leak Procedures: NA

Waste Disposal Method: ACCORDING TO LOCAL, STATE AND FEDERAL REGULATIONS

VII. ADDITIONAL INFORMATION

VENTILATION: LOCAL EXHAUST VENTILATION SHOULD BE UTILIZED WHEN WELDING, BURNING SAWING, BRAZING, GRINDING OR MACHINING WHEN EXPOSURE EXCEEDS TLV'S

IN WELDING, PRECAUTIONS SHOULD BE TAKEN FOR AIRBORNE CONTAMINATES WHICH MAY ORIGINATE FROM COMPONENTS OF WELDING ROD

ARC OR SPARK GENERATED WHEN WELDING OR BURNING COULD BE A SOURCE OF IGNITION FOR COMBUSTABLE AND FLAMMABLE MATERIALS